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RECENT LITERATURE.

LIEUT. SYMONDS' REPORT ON THE UPPER COLUMBIA RIVER.[1]—The object of this exploration is explained by the title given below; the results are perhaps the most important contribution to North American geographical science which has been made during the last two years, as it combines not only the results of the boat journey down the Upper Columbia, but also a good deal of information concerning the region drained by the headwaters of that river, obtained by Lieut. Symonds during explorations extending over a period of four years in the Upper Columbia valley. While the report is of much value to the Government, to the emigrant and to railroad men, as well as land surveyors, we will glance at some of the scientific results, premising that the geographer will find here the best and most compact account of the Columbia river, the romantic story of its discovery by the ship *Columbia*, from Boston, in 1792, and of the Cascades and the Dalles. In chapter IV, in citing the case of a log apparently stranded a thousand feet above the river, which he thinks could only have reached its present position "by being caught there when the river was a thousand feet higher than it is now," he goes on to say: "There are many other things which may be cited in proof that this river has but lately become reduced to its present size. All along up the river, wherever there is a concave portion of the bluff, there we find terraces of from ten to five hundred feet in elevation above their neighbor terraces below. These are all composed of rather loose soil, boulders and gravel, and river sediment, and have well-defined and sharp edges. These prove incontestibly the former grandeur of the river, and exist to a height of 2000 feet or more above the present river, and their sharp and well-defined edges would seem to prove their newness in the scale of time."

The Salmon river region needs explanation more, perhaps, than any other region; none of our exploring or geological surveys have ever penetrated into it; and only prospectors and scattered miners have ever explored it. In investigating the permanent region of the Rocky Mountain locust, we could obtain no information as to the nature of this large district. Lieut. Symonds calls attention to our almost entire ignorance of this region, and what he does say of the river must be new to our readers as it is to the reviewer. The Upper Snake river, as is well known, combines features of rare geological and scenic interest.

"From the vicinity of the Great Salt Lake the (Snake) river takes a north-westerly course, flowing through a tremendous cañon in which are numerous rapids and falls of great magnitude and beauty, ranking with Niagara and the falls of the Zambesi, in Africa. The principal are the Great Shoshone falls, the American falls and Salmon falls. A number of streams flow into the Snake from the lands to the south and west of its course, principal among them being the Bruneau, Owyhee, Malheur, Burnt, Powder and Grand Ronde rivers. The main branches from the east are the Malade, Boisé, Payette, Salmon, Clearwater and Palouse rivers. Nearly all the streams flowing into the Snake may be characterized as mountain torrents flowing through deep cañons, entirely unnavigable and with very little valley lands along their courses.

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[1] *Report of an Examination of the Upper Columbia river and the Territory in its vicinity*, in September and October, 1881, to determine its navigability and adaptability to steamboat transportation. Made by direction of the commanding general of the Department of the Columbia. By Lieut. THOMAS W. SYMONDS, Corps of Engineers, U. S. A., Chief Engineer of the Department of the Columbia. Washington, 1882, pp. 133. Maps.

"Some of them deserve more than a passing mention, especially the Salmon, the principal tributary of the Snake. It drains a large extent of country and joins the Snake about fifty miles above Lewiston, and flows through probably the deepest, grandest and most impassable cañon of any stream of corresponding magnitude in the world. Nowhere on earth can there be a scene more grand, gloomy and desolate than where these two rivers join their waters. Both come flowing down with torrential velocity through cañons 3000 feet in depth, with ragged, black and almost vertical sides, the milk-white waters of the Snake coursing alongside the clear blue Salmon water for a half mile or more before they finally mingle among the jagged rocks of the stupendous cañon below."

This and the following regions are now perhaps the least known of any part of the national domain, viz., the Olympic Mountain region; the region bounded on the north by the international boundary line, on the east by the Rocky mountains, on the south by the Columbia and Wenatchee rivers, on the west by Puget sound, and the regions of the St. Joseph and Clearwater rivers in Northern Idaho.

A chapter is devoted to the geological history of the Cascade mountains and the magnificent gorge of the Columbia through these mountains, based on the observations, in 1874, of Professor J. LeConte. The author has also ascended and measured the extinct volcanos in Southern Oregon, beginning with Mount Pitt, and including Mount Scott, Diamond Peak and the Three Sisters, the altitudes of which as given are all considerably below that of Mount Hood. He describes the surface geology of the Upper Columbia. The terraces he observed above the Dalles "go to show that previous to the Champlain epoch the cañon of the Columbia was cut to its present depth, and in some places far below it; that during the downward oscillation of the Champlain epoch this cañon was filled up by debris, boulders, &c., to a height of 2000 feet above the present river surface; and that at this time there was a great lake in the south-western part of the Great Plain of the Columbia." This Quaternary lake on the map is designated Lake Lewis. Many of the cañons in the Upper Columbia country were not valleys of erosion, but volcanic rents or fissures, and our author concludes that "the courses of many of the most deeply encañoned rivers of this country were determined to a very great extent by their waters finding and collecting in great fissures, and that these fissures were formed during the late Tertiary or during the upward oscillation of the Glacial epoch."

PENHALLOW'S VEGETABLE HISTOLOGY.[1]—In this little book of about forty pages the author has brought together many things which the beginner in laboratory work ought to know, and has done so in such a simple and unpretentious style that it cannot fail to be of great use, especially to those who take up the study of vegetable histology by themselves, and who have no ready teacher or demonstrator always at hand. The book contains, first, a short chapter on reagents and media for examination. In this the more indispensable materials are briefly noticed, and remarks are made upon the methods of using them.

The second chapter deals with vegetable products. Here again only the more important are taken up. The physical characters are briefly given, and the various tests and the methods of making them are described.

Next we have in outline a course of study for a beginner, which is simply a classified list of subjects for study, beginning with protoplasm, the nucleus, chlorophyll, etc., and ending with the minute anatomy of the stem and leaf.

Three valuable tables are given, devoted respectively to cell-contents, cellulose forms, and plant products. These resemble the tables in use in chemical laboratories, and show at a glance the principal physical characters of most vegetable structures, and their reactions in the presence of different reagents. These tables will prove to be very handy for the beginner. A short list of books of reference is given, and finally eighteen or twenty pages of blank leaves are left for notes and memoranda.

In a prefatory note the author announces that "if there is sufficient encouragement, it is proposed to issue a second edition, in which the plan will be much extended, thus making it of greater advantage to the beginner, and also useful to the advanced student. With this end in view, suggestions from teachers and practical histologists will be gladly welcomed." It is to be hoped that in due time this promised enlarged edition may appear.—*C. E. B.*

LUYS' THE BRAIN AND ITS FUNCTIONS.[2]—This translation for the International Scientific series will prove useful to many readers. It contains statements of facts and principles of psychology with which every person should be familiar. The author, however, is not happy in all his attempts at generalization. A few leading ideas have to do duty many times under new names, and the skill dis-

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[1] *Tables for the use of Students and Beginners in Vegetable Histology.* By D. P. PENHALLOW, B.S.; late professor of chemistry and botany in the Imperial College of Agriculture, Japan. Boston, S. E. Cassino, publisher, 1882.

[2] 8vo, pp. 327. D. Appleton & Co., New York, 1882.